

EXPERIMENT: Yeast Balloon Blow-Up

Question:

Can chilling food help stop the growth of bacteria?

My Hypothesis:

Materials Needed:

2 balloons

3 500 ml beakers

2 250 ml flasks or small clear glass or plastic bottles with small openings

Food thermometer to measure the temperature of the water

Room-temperature water (about 70 °F/21 °C)

1/4 cup of sugar

1 package of dry yeast

Warm water (about 110 °F/43 °C to 120 °F/49 °C)

Ice water (below 40 °F/4 °C)

Getting Ready

Fill the two balloons with air to stretch them, then deflate. Label the beakers:

1 – "Mixing Beaker"

2 – "Warm Water Bath"

3 – "Ice Water Bath"

Procedure

1. Fill the "Mixing Beaker" with 500 milliliters of room temperature water. (Room temperature is about 70 °F/21 °C; use your thermometer to measure the temperature of the water.)

2. Dissolve the sugar in the room-temperature water. Add yeast to the sugar/water solution and stir gently to dissolve.

3. Pour half the solution into each flask. Carefully stretch the balloon openings to fit over the openings of the flasks and place one flask in each of the other two beakers.

4. Put warm water (about 110 °F/43 °C to 120 °F/49 °C into the "Warm Water Bath"-labeled beaker—just enough to cover the yeast mixture in the flask.

5. Put ice water (below 40 °F/4 °C) into the "Ice Water Bath" beaker. Again—just enough to cover the yeast mixture in the flask.

6. Observe and record what happens after 5 minutes. After 30 minutes. After 1 hour.

My Observations

My observations at each interval were:

5 minutes:

30 minutes:

1 hour:

This is what happened to the yeast in the warm water bath:

This is what happened to the yeast in the ice water bath:

My Conclusions

If the yeast in the warm water bath were dangerous bacteria instead of a harmless yeast microorganism, what could you say the warm environment does?

If the yeast in the ice water bath were dangerous bacteria instead of good yeast, what could you say the cold environment does?

What would happen if you put a sample of the yeast/sugar solution in the refrigerator?

How do yeast and bacteria act the same?

What effect did the cold temperature of the ice water have on the yeast?

Tell Your Family...

Always store "perishable" foods in the refrigerator to prevent bacteria growth.

Did You Know?

Yeast is a good microorganism—but it shows us how bacteria can multiply!

The vocabulary word "perishable" describes foods on which bacteria could grow if not stored properly—like dairy products or vegetables. What other foods can you think of that are "perishable?"

Compliments of The Partnership for Food Safety Education

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